

Automatic mop device

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Resumen

An improved automatic mop for cleaning floors consisting of a bucket (4) located on a platform (2) fitted with free turning wheels (3), having collaterally or about itself a body acting as a frame within which one or two motors fed by a battery or accumulator with a recharge intake are arranged, having also pilot lights, switches, relay and fuse, which, by pressing a push-button, collaterally located driven by the mop stick or thru a magnet, move some vanes acting directly on textile fibers forming the mop or scrubber, squeezing its liquid contents and this falling within a bucket through a pluriperforated reversed truncated-

cone (30).



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(54) **Automatic mop wringer.**

(57) An improved automatic mop for cleaning floors consisting of a bucket (4) located on a platform (2) fitted with free turning wheels (3), having collaterally or about itself a body acting as a frame within which one or two motors fed by a battery or accumulator with a recharge intake are arranged, having also pilot lights, switches, relay and fuse, which, by pressing a push-button, collaterally located driven by the mop stick or thru a magnet, move some vanes acting directly on textile fibers forming the mop or scrubber, squeezing its liquid contents and this falling within a bucket through a pluriperforated reversed truncated-cone (30).

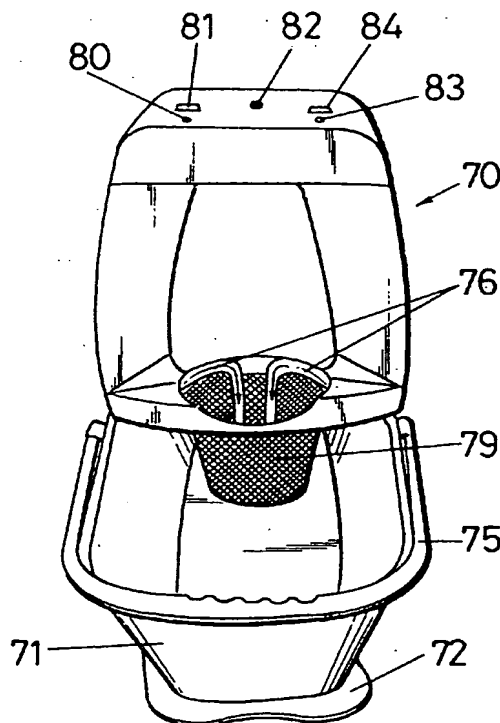


FIG.-8

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(54) **Automatic mop device**

Automatisches Mopgerät

Dispositif automatique avec un balai à franges

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• **PATENT ABSTRACTS OF JAPAN vol. 17, no. 216**
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Descripción

BACKGROUND OF THE INVENTION

The present specification refers to an improved automatic mop for cleaning floors, the purpose of which is to help an user to clean a surface such as a floor, by substantially reducing the own user's effort as it makes easy to squeeze dry a mope or the fringes of a mop, located at the lower end of a supporting stick, such as a broomstick.

FIELD OF THE INVENTION

This invention applies to the industry devoted to the manufacture of industrial and domestic appliances

RELATED ART

It is known a large variety of elongated cylindrical shaped -bodies having, or not, non-slipping areas on their surface in order to facilitate their use, since the function of these areas is to avoid the stick to slide out of an user's hands, and these -sticks are made of wood, wood coated with a plastic film, stiff plastic material, lightened metal, and so on.

All these sticks had, at one end, a receiving body, at first, formed by a duster or floorcloth, which incorporated and bonded in its surface, carried out a cleaning operation, said surface having been previously wetted thanks to the optional cooperation of a cleaning product or detergent.

After the first cleaning operation by wetting the surface to be cleaned, the user should remove the duster or floorcloth, squeeze it dry, and locate it on the corresponding portion of the stick situated at one of its ends in order to perform the drying operation of the previously water-wetted surface in cooperation with a cleaning product or not.

In a most recent date, parts made of a light material have been incorporated in the ends of a stick, said parts having a plurality of filiform elements securely united, made of a textile material being capable of receiving a large amount of water and transferring it to the surface to be cleaned, these devices being known as mops or scrubbers.

Subsequent to the first cleaning operation aided by a large -amount of water used for performing the surface cleaning, the mop or scrubber was squeezed dry to remove the water carried by it, and then it was necessary to carry out a second operation in order to remove the water from the already cleaned surface.

Of course, appreciable novelties have been incorporated in these elements mounted on the stick ends, as for the material, giving -them a greater wear resistance, a larger amount of water content and, consequently, a higher drying capacity, giving them different shapes, but always having the common denominator of being made -starting from a textile material, the main bodies being formed as a plurality of markedly elongated trips.

It has been shown that the industrial and domestic cleaning -operations involve, in all cases, a remarkable effort which has been lessened by the incorporation, within the cleaning field, of these sticks that, with the cooperation of a mop or scrubber, achieve a remarkable lessening of efforts and, also, avoid the persons performing a flooring operation to carry out this operation in a position which implies an arduous work, such as, for -example, kneeling.

At present, nevertheless, in operations carried out to clean a surface starting from a stick and a scrubber mounted on it, the the most significant hard work is to squeeze the mop or scrubber dried.

In order to perform the squeezing operation, the user must insert the assembly of textile material elements within a body ha-ving a reverse truncated-cone shape having a plurality of perforations

allowing the water to pass inside a carrier bucket, and then to twist the assembly for carrying out the squeezing operation, which, after a certain period of time, causes user's arm and back aches.

An obvious solution to the present problem would be to rely on a device, machine or apparatus capable of making easy the squeezing operation of the body formed by markedly elongated textile materials, so acting like an automatic mop.

Nevertheless, up to date nothing is known about the existence of a device having the desired features for this purpose.

SUMMARY OF THE INVENTION

The improved automatic mop for cleaning floors as proposed by the invention is constituted per se as an evident novelty in the frame in which it is incorporated, and it can be considered as a solution to the squeezing problem of a body made of trips in a textile material used for cleaning and later drying a surface.

In a more specific manner, the improved automatic mop for cleaning floors is constituted starting from a stiff platform provided with wheels facilitating its displacement, a portion of this platform being destined to incorporate in it a mop bucket, and also placing on the upper portion of the platform and, specifically, where the bucket is situated, a hinged arm.

On the upper side, a handle has been provided the function of which is to make easy the device transport, and, at the same time, and owing to the existence of a polarity reversal switch located at one end thereof, an electric circuit is made, enabling a 12V motor which is fed by a direct current, the making of the circuit being attained when performing the operation of squeezing the textile fringes

This motor drives a series of speed demultiplying gears and, at the same time, a power multiplier, so obtaining both the speed and power which are necessary for operating a series of vanes squeezing the water carried by the mop body textile fringes.

The electric feed of the motor for operating said vanes is obtained from a battery located on an adequate frame situated above the wheels carrying the frame and bucket. Said battery can be charged directly from the electric network by means of a portable battery charger.

The electric motor is specifically designed for limiting its operation for a short period of time, during which said vanes perform the fringe squeezing, the limiter being configured as an end of stroke switch which reverses the polarity to the motor, so shifting its turning sense.

Once the fringes have been squeezed, the vanes return to their rest position.

Of course, when the vanes recover their rest position, they are ready to start again the squeezing operation of the fringes so many times as required, by means of the person performing the cleaning operation upon pressing the switch located at the mop stick.

The invention features a main switch connecting and disconnecting the current intake to the motor, and it avoids, consequently, the vanes to act, having a 12V battery and relying on a 15 amp fuse in order to prevent overvoltages.

The end of the main switch and the end of the fuse are connected with the switch located at the handle, the end of which is linked, in turn, by connection, to the end-of-stroke switch limiting the course of motion of the motor driving the squeezing vanes.

During the operating time, the motor is given a positive direct current in a sense, during which the vanes move and squeeze, but, nevertheless, during the rest time, the motor receives the current in a reverse sense, only the time necessary for allowing the squeezing vanes to move back until recovering their rest position, this rest position recovery being performed in a very smooth way in order not to damage the gears moving them.

The 12V battery, the switch and the fuse are mounted in series.

As described in more detail in the description of the preferred embodiments of the invention, the mop can be shaped starting from a conventional bucket fitted with a squeezing area and on which, a

squeezing head is located, this head being fitted with adequate vanes driven by an electric motor that, in cooperation with gears, fuses, battery and switches, drives the vanes after pressing a push-button that, linked with the switch, moves said vanes in accordance with the pressing performed by the mop stick, with no need for the mop's user to directly press the push-button as by simply pressing down the latter the squeezing vanes are set in motion.

As also described later, the mop can be fitted with a press squeezing system driven by two asymmetrical arms located on either side of their inner area, being incorporated inside the frame fitted with adequate characteristics to be located on the upper side of a bucket, two motors which are automatically driven by the own user by simply pressing down a push-button starting said motors and, consequently, the squeezing arms.

Lastly, the mop can be fitted with a magnet to be located in an appropriate area of the mop stick or handle. Said magnet sets automatically the squeezing vanes in motion when it approaches the contact point next to the squeezing basket.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to complement this description and to aid to a better understanding of the features of the invention, the accompanying drawings, which are a part of this specification, show in an illustrative but non limitative sense, the following:

Figure 1 is a side elevational view of the object of the invention in a first embodiment, relating to an improved automatic mop for cleaning floors.

Figure 2 is a front elevational view of the object represented in Fig. 1.

Figure 3 is a perspective view of the mop which is the object of the invention in a second embodiment, with the addition of the bucket, the supporting platform and the squeezing head, which is the main part in this embodiment.

Figure 4 is a side elevational and perspective view of the object shown in Fig. 3.

Figure 5 is a front elevational view of the object shown in -Figs. 3 and 4.

Figure 6 is a perspective view of a third embodiment of the invention.

Figure 7 is a back elevational view of the object shown in Figure 6.

Figure 8 is a front elevational and perspective view of a fourth embodiment of the invention.

Figure 9 is, lastly, a view of the tool acting direct on the -surface to be cleaned and then dried, by means of which the squeezing vanes of the mop or scrubber operate.

PREFERRED EMBODIMENTS OF THE INVENTION

From Figure 1, it can be seen the manner in which the improved automatic mope for cleaning floors 1 is constituted starting from a base 2, preferably made of a stiff material, configurated as a platform having wheels at the bottom side thereof 3, the function of these wheels being to make easy the assembly transport. On the platform, there is incorporated a casing 15 housing a motor, mechanisms and feeding battery of the own motor, while on the other side of the casing, a conventional mop bucket is mounted 4.

The mop 1 has a hinged arm 7 with a joint point 16, a handle 13 and a sliding tube 8 located next the handle or holder 13.

The casing is fastened to the frame or base 2 by means of conventional screws 11.

The casing has a connection intake 10 for receiving the cable of a charger from which the 12V battery is charged. This battery is located within the casing, thru which the motor is fed.

In the same way, this side of the casing has an intake and connection 12 for a 15 amp fuseholder, and also a switch 14 for starting the mop.

In the inner center part of the casing, an arm 5 is installed at the lower middle part of which a squeezing element 9 is located, formed as squeezing vanes, which is inserted into a cavity existing in the upper side of a bucket 4, to be used as a squeezing element of the scrubber or mop fringes.

The arm 5, specifically in its external upper zone, has a support 6 to which the mop stick is fixed.

The motor drives an assembly of speed demultiplying gears, and, in turn, a power multiplier, so obtaining the adequate -speed and power necessary to said arm or vanes 9 for squeezing the mop fringes.

The motor is fitted with an end-of-stroke acting thru a small notch that opens, and when the end-of-stroke is effected, it reverses the polarity to the motor, thereby the arm 9 returns to its rest position. Then, the squeezing operation is started -again so many times as required.

In turn, the end-of-stroke switch limits the course of the motor driving the squeezing arm.

Figures 3, 4 and 5 show different views of a second embodiment of the invention, referred, in general, as 20, which is -constituted starting from a bucket 22 made of any material, situated on the upper surface of a support and translation part 23 fitted with free turning wheels 24, the bucket 22 having a handle or holder 26, knurled at its center portion to make -easy its grasping and adherence to the user's hand.

A squeezing head 25 is mounted on the bucket 22, by conventional means, which is formed by a casing housing an electric motor, a shaft, gears, a battery and a relay (not shown in the figure as they are conventional elements, coupled one other in order to achieve the purpose of driving squeezing vanes), the function of the motor being to receive the battery or accumulator current after an external switch 29, located within a notch 28 having a semicircular arch shape, vertically situated, is pressed by the handle or holder of the mop with a light pressure, a relay acting once the switch 29 has been operated, giving the appropriate orders to the inside of the squeezing head with the purpose of causing the motor to act, starting to turn and setting in motion a shaft acting on squeezing arms or vanes 27 exerting a pressure on the mop or scrubber located within the basket acting as a filter 30, squeezing the content of water from the mop, this water passing inside the bucket 22, the dirtiness potentially dragged by the mop during the cleaning or washing operation of the surface, resting on the surface of the filter 30.

Once the turning has been effected, the shaft, acting in cooperation with the gears due to the fact that it is fitted with a notch acting as end-of-stroke, stops the motion of the squeezing arms or vanes 27, and the pressing operation on the mop by means of the squeezing vanes or arms 27 can be repeated upon acting again on the switch 29, turning the motor fed by an electric current obtained from the battery or accumulator, and commencing again the cycle.

The bucket 22 has, on its upper edge, a diametrical trimming stiffing it in order to allow a coupling of the squeezing head 25.

The squeezing head 25 has, in its external portion, exactly on one of its sides, a light pilot 34, showing every moment that the battery or accumulator incorporated inside the squeezing head 25 is being charged by means of an electric current intake configured as a flexible cable having, at one of its ends, a female pin incorporated in the intake 35, while the other end of the cable has a male pin connected to a conventional electric power intake.

Also, the squeezing head 25 has a pilot 31 to be lighted on when the lighting switch 32 has been actuated, this switch allowing that, by operating the grasping element or handle which carries the mop, exactly by the pressure exerted by the user and through the stick on the switch 29, the arms 27 act, squeezing the water carried by the mop and dropping within the bucket 22 thru the basket or filter 30.

Lastly, it should be pointed out that the mop is fitted with a protection fuse 33.

As a complement to the description made on the second embodiment, it should be noted that once the cleaning operations have been ended, the squeezing head 25 can be removed from its operational housing, and once the bucket 22 has been duly cleaned up the squeezing head 25 can be housed within the bucket 22, occupying, consequently a minimal space.

Figures 6 and 7 show a third embodiment of the invention, which has been referenced in a general way with 40, and being constituted starting from a frame or casing 42, on which all the acting mechanisms of the object of the invention are placed, and this assembly of frame or similar 42 being placed on a conventional bucket 43 by using anchoring links 59 located on the back side thereof, and having lateral projections emerging from steps 60 formed or located at the lower part of the main part.

The frame or casing 42 is located on a bucket 43, and this, in turn, is placed on a transport carriage 44 fitted with appropriate wheels 45, and it can optionally carry a basket 47 to contain auxiliary elements for cleaning purposes, such as a spare mop, the basket being installed on the vertical arms of handle 46, which facilitates the motion of the assembly composed of a bucket carrying the squeezer on its upper mouth and fixed to one of its side branches.

As can be seen in Figure 6, the squeezer has a retaining link for the mop holder 48, fixed to a front area, presenting a center recess on the upper portion 50, fitted with a switch through which and with the assistance of the mop or scrubber stick, a light pressure is exerted on said switch, setting automatically in motion the motors in a sense or other, according to the turning of the current obtained from the battery and being determined by a relay driven by said switch 50, and thanks to the cooperation of an end-of-stroke switch (non referenced).

When the operating switch 50 is enabled, that is to say, when it is subject to the tool and handle or holder of the mop or scrubber pressure, the motor will run in the desired sense, moving the gear assemblies and these latter, in turn, will move the arms 51 and 52 performing the pressing or squeezing operation, so achieving that the arms 51 and 52, when approaching one other, squeeze the mop or scrubber, the water falling towards the lower zone, passing thru a grating 49, which collects the refuse of the materials caught by the mop, and the water, now practically clean, pass into the bucket 43 on which the assembly is installed.

As can be seen in Figure 7, the invention rely on a lighting pilot 54, a main switch 55 and a rapid access protection relay 56, located on one of the back sides of frame 42, while on the opposite side, a charge indicator pilot 57 is installed, which acts as an indicator for the electric power fed by the battery (not shown) through a conventional cable 53 plugged in a plug located at the squeezer, and having the other end connected to a conventional socket linked to the electric network.

The side vanes of support 60, located at the lower part of the frame or casing 42, can optionally have two emerging stubs 58 to be duly engaged on the side walls of bucket 43, exactly on the upper inner zone thereof.

In Figure 8, a fourth embodiment of the invention is illustrate, with general reference 70, which is constituted, as in previous cases, starting from a bucket 71 made of an appropriate material having a planar rectangular shape and having all its vertices -rounded, presenting, at its upper portion, a perimetral oversized edge acting as a reinforcement link of the own bucket 71, allowing to fix on same a body 74, inside which all acting elements of the object of the invention are incorporated.

The bucket 71 has a handle or holder 75 and it is situated on a platform 72 provided with free turning wheels 73 to make easy its transportation and avoid the user to carry out efforts during the cleaning operations.

On the perimetral edge of the main body of bucket 71, a body containing mechanical and electric elements 74 is installed, having a basket 79 presenting a plurality of perforations in order to allow to pass the water taken out from the mop or scrubber introduced via its upper mouth, the main body 79 having a reverse truncated-cone shape and with inner vanes 76 acting to perform the mop or scrubber squeezing, these vanes 76 being moved by the motor located in the frame or casing shaping the body 74.

On the upper portion of the main body 74, frame or casing, a pilot light 80, a main switch 81, a fuseholder 82, an indicator 83 are arranged, the function of said indicator 83 being to inform the user about the necessity of recharge the battery located inside, by engaging a feeder in the base of socket 84.

In synthesis, the automatic mop, by means of the vanes 76 emerging from the inner walls of basket 79, squeezes the fringes emerging from the mop stick (shown in Fig. 9 with no reference), the vanes 76 exerting an adequate pressure to attain a full squeezing of same.

Owing to an inner circuit which operates when the mop is inserted into the reverse truncated-cone shaped basket 79, and by simply approaching the stick of the mop or scrubber to the front end of

frame, the stick, fitted with an inner magnet 85 adequately dimensioned, sets in operation the inner circuit which has a timer which operates for an adequate time the squeezing vanes 76, this operation being enhanced with regard to the inner circuit by a microswitch.

It is not considered necessary to extend more this description for an expert in the art to understand the scope of the invention and the advantages derived from it.

The materials, shape, size and arrangement of the components are open to variation, provided that it does not imply any alteration to the essence of the invention.

The terms under which this specification have been described should be always taken in an ample and not limitative sense.

Datos proporcionados por la base de datos de esp@cenet test - I2

Reivindicaciones

- 1.- An improved automatic mop for cleaning floors of those that for cleaning a floor in the strict sense use a scrubber, duster, etc, formed by a stick or holder, in general markedly elongated and cylindrical, made of any material capable of receiving, at one of its ends, a part formed by fringes made of a textile material and capable of absorbing liquids, characterized in that it is constituted in a preferred embodiment of the invention, starting from a platform (2) acting as a base having below it free turning wheels (3) which allow the device to be transported, the platform (2) having, on a side, a casing (15) which houses an electric motor fitted with an end-of-stroke switch, a 12V battery and the relative connections, the casing having, on a side, a hinged arm -composed of two lengths (7), (7'), which are hinged at a point (16), fitted with a handle or holder (13), and a sliding tube (8) the function of which is to fix both lengths, and from the center end of casing (15) an arm emerges; having at its lower middle - part a complementary squeezing arm (9) incorporated in the squeezing area of a bucket (4) located on the base (2), the arm (5) having at one end a switch (6) acting in cooperation with the mop stick.
- 2.- An improved automatic mop for cleaning floors, according to claim 1, characterized in that on the external surface of casing (15), a base (10) has been arranged for incorporating a battery charger, a main switch (14) and a fuseholder de 15 amperes (12), the casing (15) being fixed to the base (2) by means of screws (11).
- 3.- An improved automatic mop for cleaning floors, according to claims 1 and 2, characterized in that the motor has its motion limited in a predetermined time for performing the squeezing of the fringes while the rest time is determined thru a switch having an end-of-stroke switch reversing the motor polarity and changing its turning sense, the end-of-stroke being formed by a notch that, when open reverses the motor polarity, the arm returning to its starting position, allowing to reset the operation by pressing the switch (6) with the stick bearing textile fringes or trips.
- 4.- An improved automatic mop for cleaning floors, characterized in that in a second embodiment of the invention, on the perimetral edge of bucket (22), stiffened by oversize, there is located a squeezing head fixed thereto by conventional means (25), inside which there are a motor, a battery or accumulator, a relay, a shaft fitted with an end-of-stroke switch, and gears, acting when the mop stick presses a switch (29) arranged on the front -end of the squeezing head (25) placed in the middle portion of a recess (28) having a semicircular arch shape, setting in operation the relay and, then, the remaining mechanisms until enabling the end-of-stroke switch, the motor and other elements being fed by a battery or accumulator acting on external arms or vanes (27) which are set in motion towards inside a basket (30) on which the mop or scrubber is located, the squeezed water passing thru the basket (30) which acts as a filter inside the bucket (22) where the water is deposited.
- 5.- An improved automatic mop for cleaning floors, according to claim 4, characterized in that on one of the external surfaces of the squeezing head (25), there is a pilot (34) indicating that the battery or accumulator is being fed for being recharged thru a flexible electric cable fitted at one of its ends with a female pin to be plugged in a plug (35), while on the other surface there is a male pin to be plugged in a conventional socket, there being also a main switch (32) for lighting a pilot light (31) to indicate the starting of the automatic mop, and this having a protection fuse (33).
- 6.- An improved automatic mop for cleaning floors, characterized in that in a third embodiment, the frame or casing (42) is arranged on the upper portion of a conventional bucket (43) by using anchoring flanges (19) located at the back and lower part of frame (42) , and lower shoulders (60) fitted optionally with emerging stubs (58) to be fixed to the inner walls of carrier bucket (43), there being in the lower part of the frame (42) a grating (49) acting as a filter for the squeezed water, and a vertical retaining part for the acting tool of the carried mop, there being inside the casing or frame (42), two motors, two gear assemblies on the sides, and two batteries fed by a cable (53) connected to a conventional plug on the frame (42) at one of its ends, while the other end is connected to a conventional electric network, with a pilot light (57) indicating the charge operation.
- 7.- An improved automatic mop for cleaning floors, according to claim 6, characterized in that the two motor will turn in a sense or other, depending on the sense in which they receive the battery current, this operation being determined by a relay enabled by a switch (50) and having an end-of-stroke switch, and when the motors turn they will drive the gears and these, in turn, will move two operating arms or vanes (51), (52), squeezing the mop placed between arms (51), (52) owing to the operation of the mop supporting tool when the switch (50) is pressed by it, this switch, when freed, receives a reversal current of the batteries, the gears turning also in a reverse sense, as well as the center shaft of acting arms or vanes (51), (52); this shaft having at one end an end-of-stroke switch which determines the break of the current to the motors, the acting arms or vanes -(51), (51) remaining in a rest position awaiting a new order from the switch (50) to start the operation again, there being inside the frame (42) a battery charger connected with the current intake and, in turn, with the batteries incorporated.
- 8.- An improved automatic mop for cleaning floors, characterized, in a fourth embodiment, in that within

a pluriperforated basket (79), there are located two vanes (76) emerging from the inner walls, which are capable of being set in operation, approaching one other, clearing away filiform elements from the mop or scrubber fitted with a handle, holder or stick, within which a magnet (85) is provided, which, when approaching the front end of the upper body (74) enables a microswitch located in an inner circuit moving the vanes (76) which act on the mop for a predetermined time, controlled by a timer located within the frame or casing (74), the vanes (76) being moved by a motor fed by the power obtained from a battery arranged within the frame (74), exerting a downward pressure on the mop and the reversed cone.

Datos proporcionados por la base de datos de esp@cenet test - I2

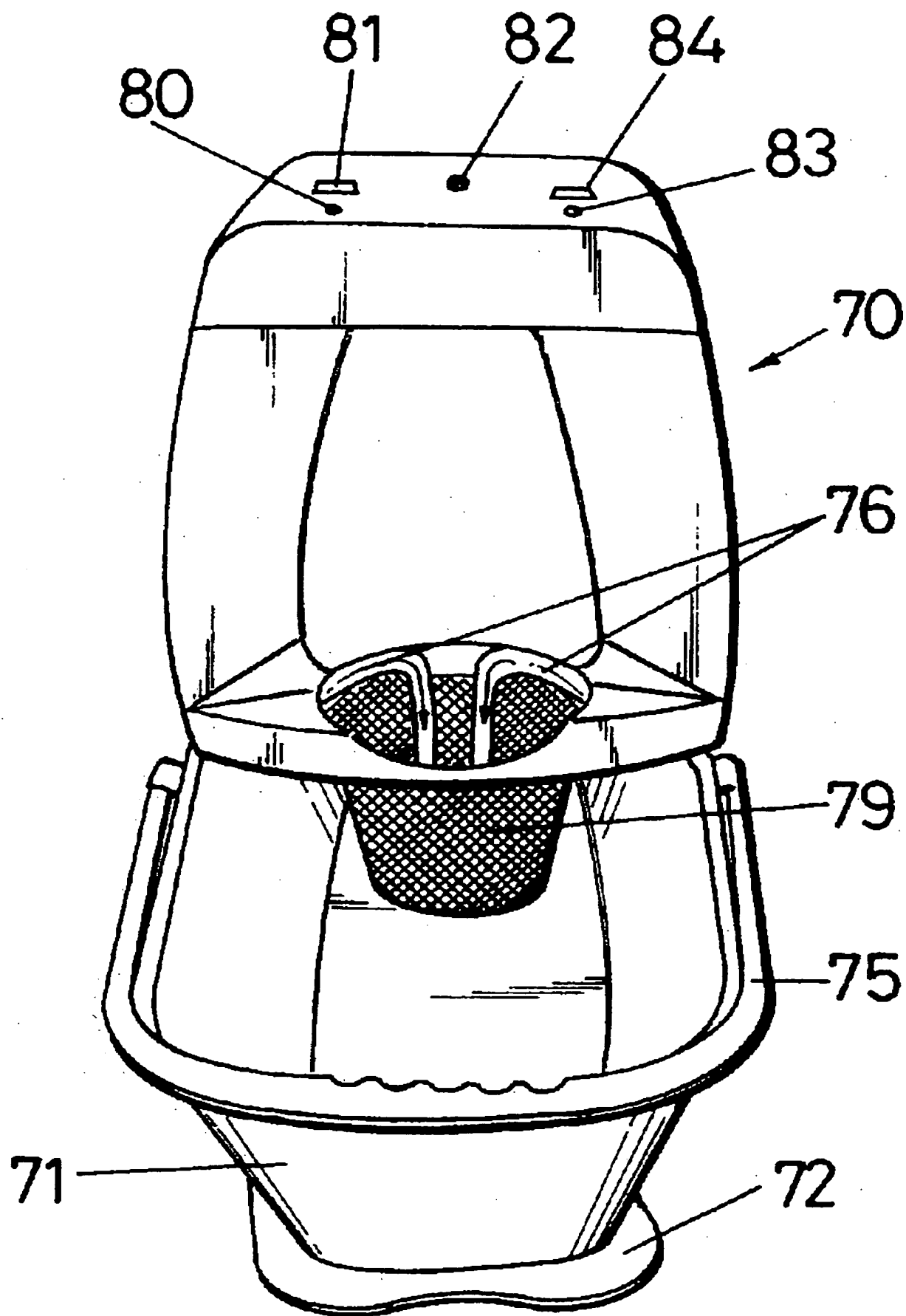


FIG.-8

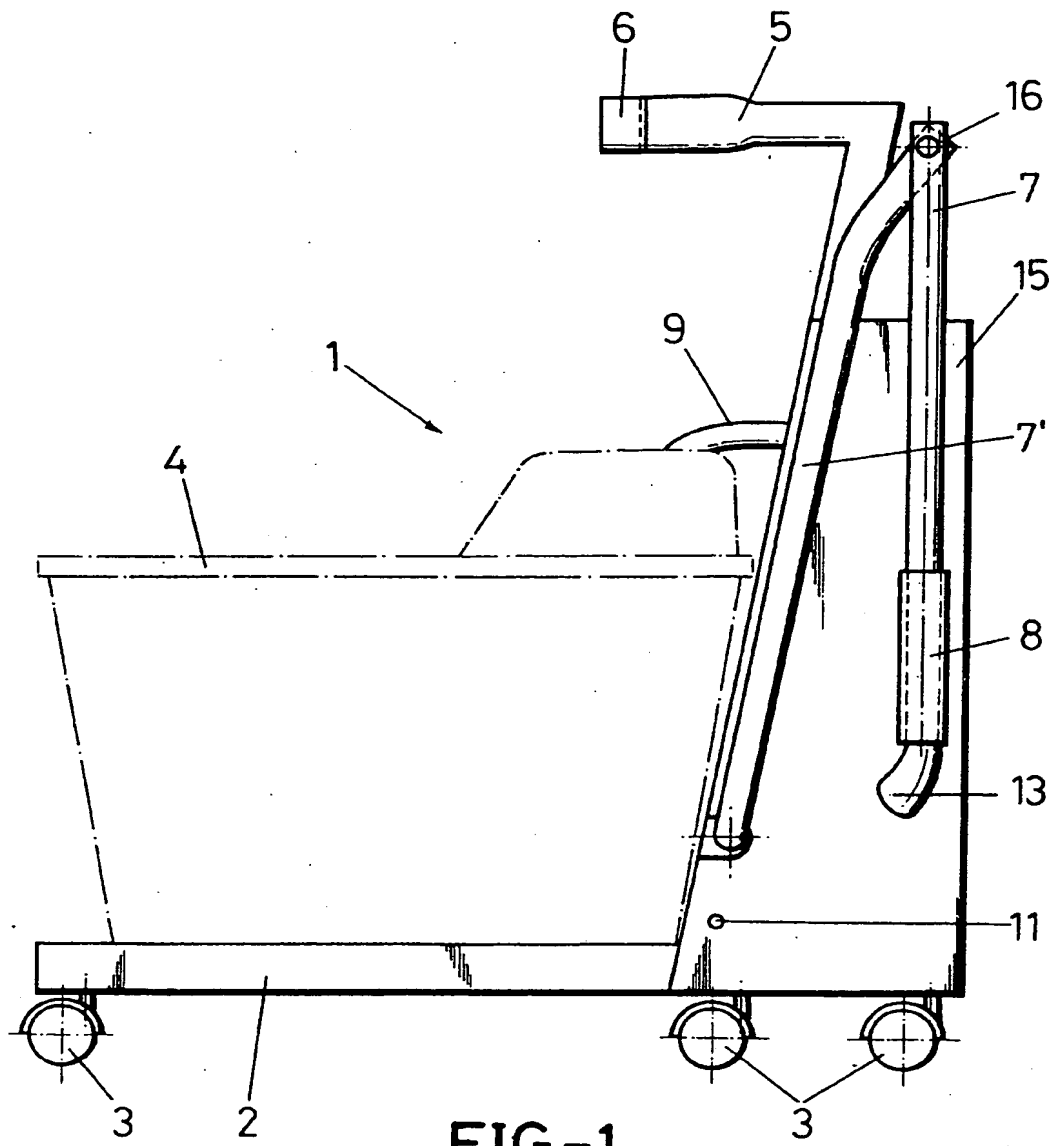


FIG.-1

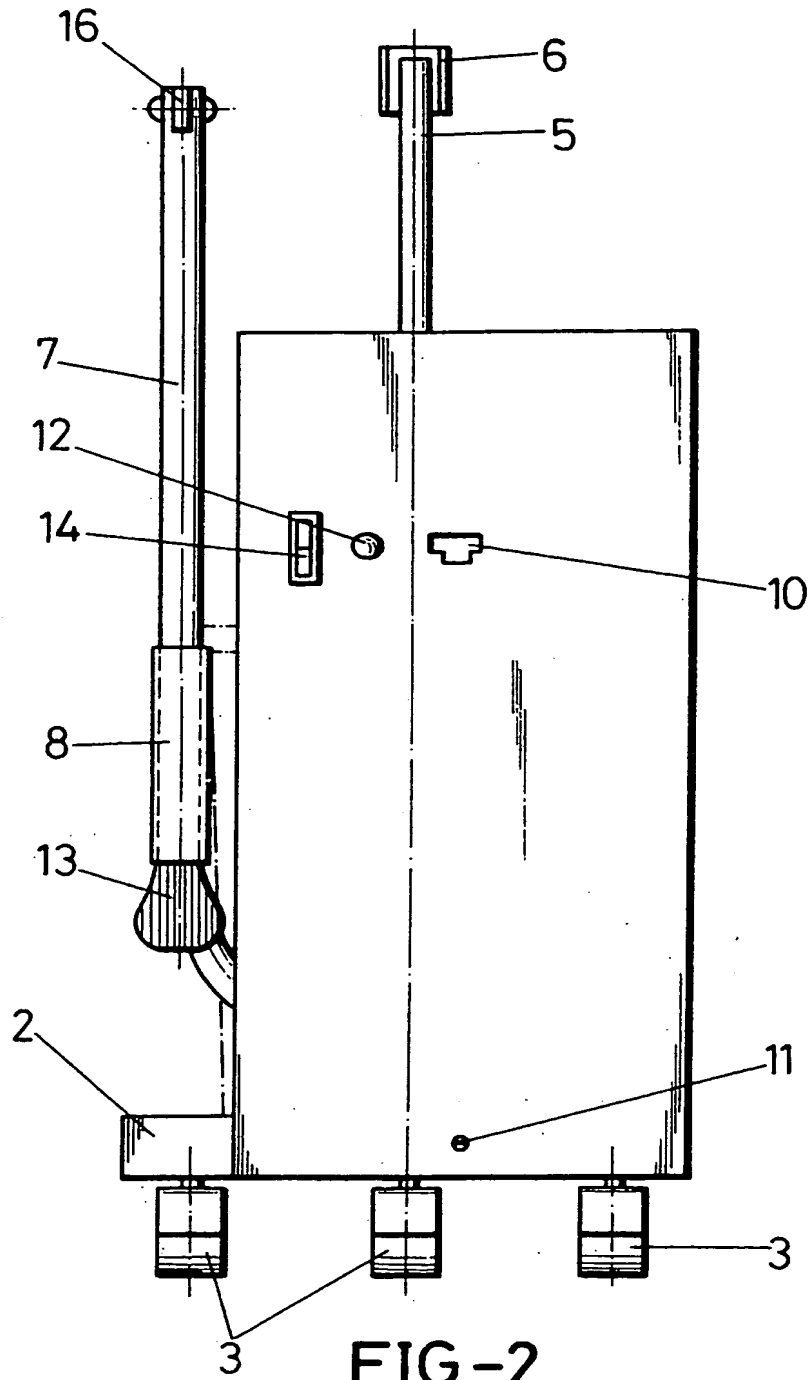


FIG.-2

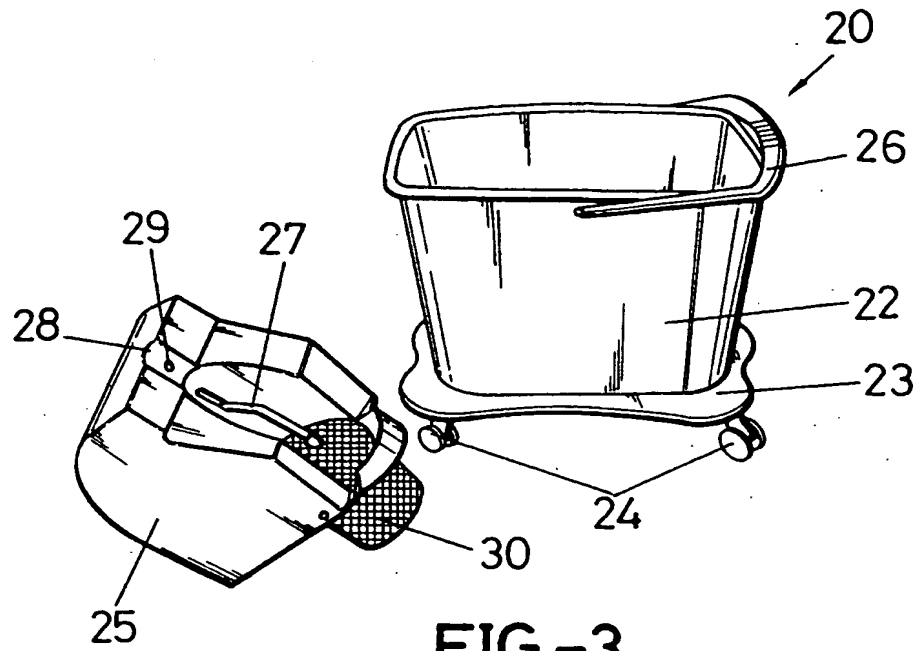


FIG.-3

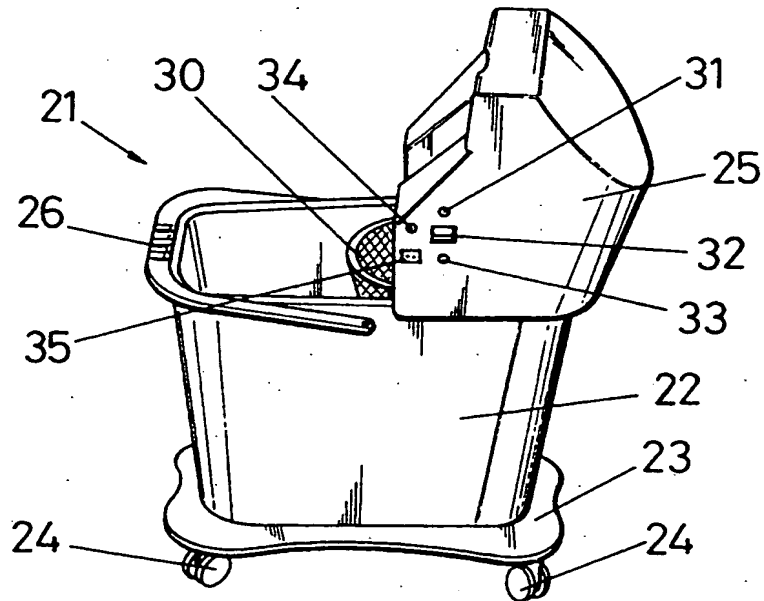


FIG.-4

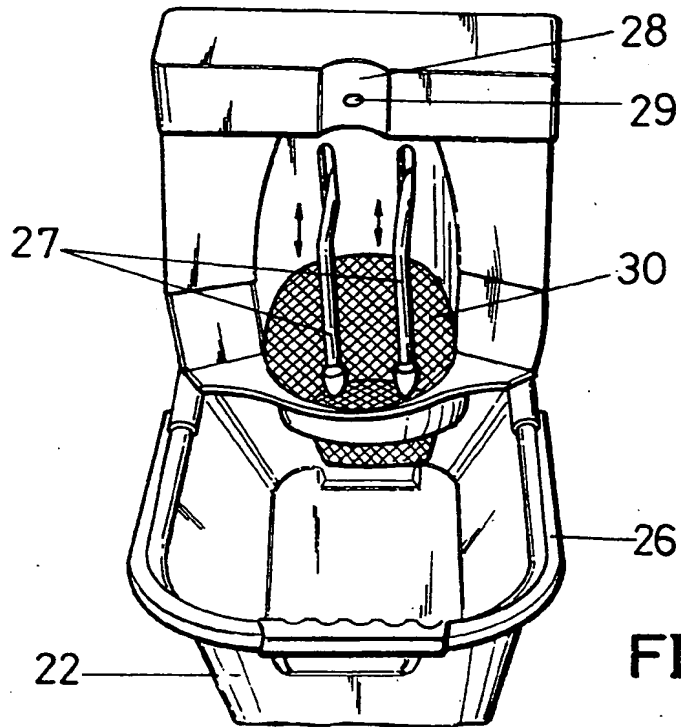


FIG.-5

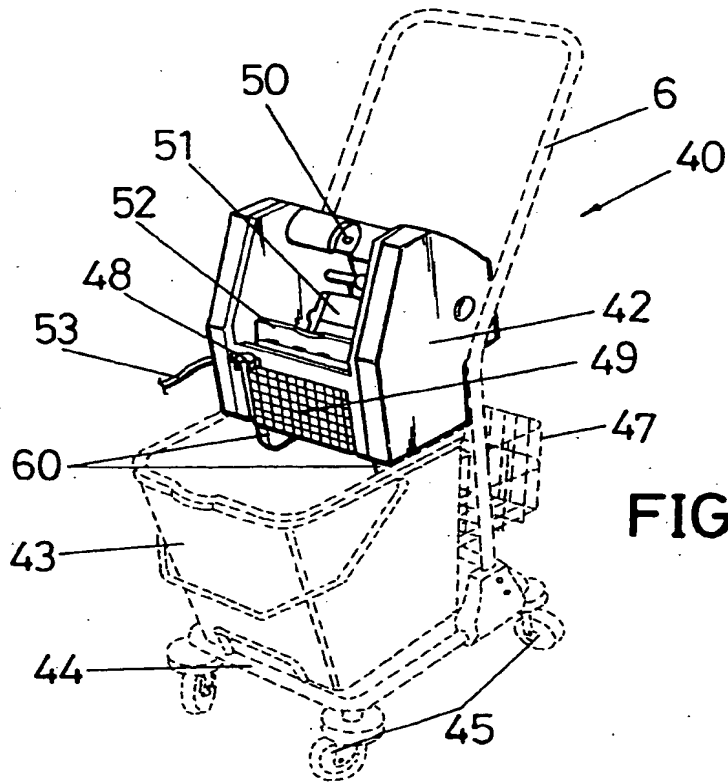


FIG.-6

